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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,694	05/10/2007	Michael Schorn	601-083	8006

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EXAMINER	
SY, MARIANO ONG	
ART UNIT	PAPER NUMBER
3657	
MAIL DATE	DELIVERY MODE
02/01/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,694	SCHORN ET AL.	
	Examiner	Art Unit	
	MARIANO SY	3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,6 and 9-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,6 and 9-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/23/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 23, 2010 has been entered.

2. Claims 3 and 5 are objected to because of the following informalities:

Claim 3, line 1 "according to claim 2" should be -- according to claim 1--,

Claim 5, line 1 "according to claim 4" should be -- according to claim 1--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 6 and 9-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "the shell-type connecting structure" in line 16 and in lines 18-19. It is indefinite and vague as to what the phrase "shell-type" means.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 3, 5, 9-13, 21, 22, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leist et al. (US 5,282,521).

Leist et al. disclosed a caliper for a disc-brake comprising two side walls 92, 94 at a distance from each other which delimit a space suitable to accommodate a portion of a brake disc 20, in which one of said walls comprises means for attaching the caliper to a vehicle so that said caliper is integral in rotation and in translation and the side walls are connected to each other by means of a connecting structure 90 which straddles the disc space, in which each of said side walls delimits at least one seating capable of

accommodating at least one pad and in which the caliper comprises thrust means 102 capable of forcing the pads against the brake disc to clamp the pads, said thrust means being secured to said side walls in such a way that said side walls absorb the entire clamping force and said seatings being capable of securing the pads in such a way that the side walls also absorb the entire braking force, in which said connecting structure comprises one or more shells, arc-shaped or arranged along an arc, connected so as to be integral with both side walls along outer circumferential edges thereof; wherein said one or more shells circumferentially overlap the area of said seating for the pads.

Leist et al. disclosed "In order to meet the environmentally mandated goal of reducing vehicle weight, it would be highly advantageous to provide a disc brake caliper which could significantly reduce the amount of metal needed in forming the bridge area of the caliper ----- provides a reaction system which allows the caliper to have a bridge section far less mass than what was previously known to be allowable, see col. 1, lines 30-40.

However Leist et al. was silent to disclose wherein the slenderness of said one or more shells expressed as the ratio of thickness to circumferential extension of said one or more shells relative to an axis of rotation of the brake disc is between 5/100 and 17/100; wherein the connecting structure having a radius of 180 mm to 220 mm; wherein the average thickness of the shell is less than 20 mm or between 5 mm to 15 mm; wherein the circumferential extension of at least one of said shells is at least double its axial extension relative to the axis of rotation of the disc; wherein said one or more shells delimit one or more through openings in which the total area of through

opening is less than 40% of the total area of one or more shells including that of the through openings; wherein the slenderness of said one or more shells, including the through openings, expressed as the ratio of thickness to circumferential extension of the through opening relative to the axis of rotation of the brake disc is between 2/100 and 4/100; wherein the slenderness of said one or more shells in the area of the seatings for the pad, expressed as the ratio of thickness to axial extension relative to the axis of rotation of the brake disc is between 3/35 and 10/35; wherein the slenderness of said one or more shells in the areas of the walls outside the seating for the pads, expressed as the ratio of thickness to axial extension relative to the axis of rotation of the brake disc is between 2/7 and 5/7.

It would have been obvious to one of ordinary skill in the art to provide the caliper of Leist et al. with the above range of limitations that are the necessary elements/components that engineering design is based upon, since the above range of limitations are based on some of the factors that depend on the size of the caliper, the number of through openings on the bridge or connecting structure of the caliper housing, the thickness of the bridge, the size of the piston or pistons for the braking torque needed, the size of the brake rotor, the type of application, and the type or composition of material used and the temperature generated, in order to provide optimization of the design of the disc brake so as to avoid failure of the caliper housing.

6. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leist et al. in view of Reeves (WO 03/071151-A1).

Leist et al. disclosed wherein the connecting structure comprises a single shell with a through opening but failed to disclose a substantially circular through opening and also failed to disclose three substantially circular openings equidistant from each other in the circumferential direction and also arranged halfway between the two side shells; wherein the three openings are arranged substantially in the area of the caliper in which the seatings for the pads are located.

Reeves teaches, as shown in fig. 1, a caliper 10 with connecting structure comprises a single shell with three through openings equidistant from each other in the circumferential direction and also arranged halfway between the two side shells; wherein the three openings are arranged substantially in the area of the caliper in which the seatings for the pads are located.

It would have been obvious to one of ordinary skill in the art to provide the caliper of Leist et al. with three through openings equidistant from each other in the circumferential direction and also arranged halfway between the two side shells; wherein the three openings are arranged substantially in the area of the caliper in which the seatings for the pads are located, as taught by Reeves, and also with substantially circular openings, as a matter of engineering design depending upon the type and size of application in order to provide optimization of the design of the disc brake.

7. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leist et al. in view of Czich et al. (US 4,709,789).

Leist et al. disclose wherein the connecting structure comprises two outer shells arranged at opposite ends of the caliper and the through opening is substantially rectangular. However Leist et al. failed to disclose a central shell arranged approximately halfway between said outer shells, wherein the connecting structure delimits between the central shell and each of said outer shells, a through opening having a circumferential extension less than the circumferential extension of the adjacent shells.

Czich et al. teaches, as shown in fig. 1, a caliper having a central shell arranged approximately halfway between said outer shells, wherein the connecting structure delimits between the central shell and each of said outer shells, a through opening having a circumferential extension less than the circumferential extension of the adjacent shells.

It would have been obvious to one of ordinary skill in the art to merely provide the caliper of Leist et al. with the known central shell arranged approximately halfway between said outer shells, wherein the connecting structure delimits between the central shell and each of said outer shells, a through opening having a circumferential extension less than the circumferential extension of the adjacent shells, as taught by Czich et al., as a matter of engineering design depending upon the type and size of application in order to provide optimization of the design of the disc brake.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leist et al. in view of Czich et al. '789 as applied to claims 6, 17, and 19 above, and further in view of Demoise, Jr. (US 6,039,155).

Leist et al. as modified, failed to disclose wherein the central shell delimits a further through opening arranged approximately at the center of the central shell, said further through opening having a circumferential extension less than that of each of the portions of the central shell.

Demoise, Jr. teaches, as shown in fig. 3, the use of a caliper wherein the central shell delimits a further through opening arranged approximately at the center of the central shell, said further through opening having a circumferential extension less than that of each of the portions of the central shell.

It would have been obvious to one of ordinary skill in the art merely to provide the caliper of Leist et al. with known central shell that delimits a further through opening arranged approximately at the center of the central shell, said further through opening having a circumferential extension less than that of each of the portions of the central shell, as taught by Demoise, Jr., as a matter of engineering design depending upon the type and size of application in order to provide optimization of the design of the disc brake.

9. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leist et al. in view of Way (US 5,558,183).

Leist et al. failed to disclose wherein on the radially outer side of at least one of said shells, a groove is made for accommodating a pipe for fluid to pass between hydraulic cylinders arranged in the two side walls; wherein each of the two side walls delimits three seatings for hydraulic cylinder/piston units; wherein the three seatings are arranged on circumferences with a radius decreasing in the direction of movement of the brake disc corresponding to forward travel of the vehicle.

Way teaches, as shown in fig. 1-3, a caliper wherein on the radially outer side of at least one of said shells, a groove is made for accommodating a pipe for fluid to pass between hydraulic cylinders arranged in the two side walls; wherein each of the two side walls delimits three seatings for hydraulic cylinder/piston units 16, 17, 18; wherein the three seatings are arranged on circumferences with a radius decreasing in the direction of movement of the brake disc corresponding to forward travel of the vehicle.

It would have been obvious to one of ordinary skill in the art merely to provide the caliper of Leist et al. with known groove made for accommodating a pipe for fluid to pass between hydraulic cylinders arranged in the two side walls and each of the two side walls delimits three seatings for hydraulic cylinder/piston units 16, 17, 18; wherein the three seatings are arranged on circumferences with a radius decreasing in the direction of movement of the brake disc corresponding to forward travel of the vehicle, as taught by Way, in order to provide a rigid attachment for the pipe in order to avoid movement to the joints on the pipe so as to minimize leaks and also the diameter of each piston can be made smaller and the braking force can be distributed thereby reduction in size.

Response to Arguments

10. Examiner has considered all arguments in the Remarks but are moot based on new grounds of rejection.

Examiner still maintains that one of ordinary skill in the art to provide the caliper of Leist et al. with the range of limitations in the claim in regards to the slenderness and the circumferential extension of the connecting structure comprises one or more shells and the size of the through openings are the necessary elements/components that engineering design is based upon, since the above range of limitations are based on various factors that depend on the size of the caliper, the number of through openings on the bridge or connecting structure of the caliper housing, the thickness of the bridge, the size of the piston or pistons for the braking torque needed, the size of the brake rotor, the type of application, and the type or composition of material used and the temperature generated, in order to provide optimization of the design of the disc brake so as to avoid failure of the caliper housing.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARIANO SY whose telephone number is (571)272-7126. The examiner can normally be reached on Mon.-Fri. from 8:30 A.M. to 2:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi, can be reached on 571-272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/MS/

January 20, 2011

/Robert A. Siconolfi/

Supervisory Patent Examiner, Art Unit 3657